

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To: MICHAEL W. FARN
FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CALIFORNIA 94041

Fenwick & West LLP

FEB 25 2008

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file **RECEIVED**

11430 PCT

Date of mailing
(day/month/year)

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.
PCT/US07/03694

International filing date
(day/month/year) 13 February 2007

Applicant **RELIANT TECHNOLOGIES, INC.**

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
1211 Geneva 20, Switzerland, Facsimile No.: +41 22 740 14 35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.
3. ☐ **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Reminders

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Authorized officer:

Blaine R. Copenheaver

Telephone No. 571-272-7774



PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To: MICHAEL W. FARN
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THE WRITTEN OPINION OF THE INTERNATIONAL
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(PCT Rule 44.1)

Date of mailing
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22 FEB 2008

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11430 PCT

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.
PCT/US07/03694

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(day/month/year) 13 February 2007

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In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

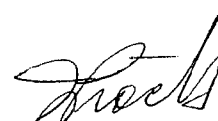
See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

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Facsimile No. 571-273-3201

Authorized officer:

Blaine R. Copenheaver

Telephone No. 571-272-7774



PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 11430 PCT	FOR FURTHER ACTION		see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US07/03694	International filing date (<i>day/month/year</i>) 13 February 2007	(Earliest) Priority Date (<i>day/month/year</i>) 13 February 2006	
Applicant RELIANT TECHNOLOGIES, INC.			

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of:

☒ the international application in the language in which it was filed.

☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☒ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 1

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US07/03694

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Group I, claims 1-28, drawn to a method of treating skin having irradiating the skin with laser radiation.
Group II, claims 29-37, drawn to an apparatus for laser treatment of skin having a housing, a scanning apparatus, a lens and a tip.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US07/03694

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A61B 18/18; A61N 5/06 (2007.01)

USPC - 606/9; 607/89

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8) - A61B 18/18; A61N 5/06 (2007.01)

USPC - 606/9; 607/89

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatBase

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,881,212 B1 (CLEMENT et al) 19 April 2005 (19.04.2005) entire document	1-2, 7, 11, 17-19, 23, 28
Y		3-6, 8-10, 12-16, 20-22, 24-27
Y	US 2005/0049582 A1 (DEBENEDICTIS et al) 03 March 2005 (03.03.2005) entire document	3-6, 8-10, 13-16, 20-22, 24-27
Y	US 2005/0015077 A1 (KUKLIN et al) 20 January 2005 (20.01.2005) paragraph [0023]	12
X	US 2005/0154382 A1 (ALTSHULER et al) 14 July 2005 (14.07.2005) entire document	29, 34-35
Y		30-33, 36-37
Y	US 2001/0023351 A1 (EILERS et al) 20 September 2001 (20.09.2001) entire document	30-33, 36-37
Y	US 5,908,415 A (SINOFSKY) 01 June 1999 (01.06.1999) columns 5 and 6	36-37

☐ Further documents are listed in the continuation of Box C.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

04 January 2008

Date of mailing of the international search report

22 FEB 2008

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents

P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

Authorized officer:

Blaine R. Copenheaver

PCT Helpdesk: 571-272-4300

PCT OSP: 571-272-7774

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: MICHAEL W. FARN
FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CALIFORNIA 94041

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

22 FEB 2008

Applicant's or agent's file reference
11430 PCT

FOR FURTHER ACTION

See paragraph 2 below

International application No.
PCT/US07/03694

International filing date (day/month/year)
13 February 2007

Priority date (day/month/year)
13 February 2006

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - A61B 18/18; A61N 5/06 (2007.01)
USPC - 606/9; 607/89

Applicant RELIANT TECHNOLOGIES, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Date of completion of this opinion
04 January 2008

Authorized officer:

Blaine Copenheaver

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US07/03694

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed.
 - ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of:
 - a. type of material
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material
 - ☐ on paper
 - ☐ in electronic form
 - c. time of filing/furnishing
 - ☐ contained in the international application as filed
 - ☐ filed together with the international application in electronic form
 - ☐ furnished subsequently to this Authority for the purposes of search
4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US07/03694

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has, within the applicable time limit:
- ☒ paid additional fees
 - ☐ paid additional fees under protest and, where applicable, the protest fee
 - ☐ paid additional fees under protest but the applicable protest fee was not paid
 - ☐ not paid additional fees
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

- ☐ complied with
- ☒ not complied with for the following reasons:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-28, drawn to a method of treating skin having irradiating the skin with laser radiation.

Group II, claims 29-37, drawn to an apparatus for laser treatment of skin having a housing, a scanning apparatus, a lens and a tip.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature of Group I, a method of treating skin having irradiating the skin with laser radiation, is not present in Group II; the special technical feature of Group II, an apparatus for laser treatment of skin having a housing, a scanning apparatus, a lens and a tip, is not present in Group I.

Since none of the special technical features of the Group I or Group II inventions is found in more than one of the inventions, unity of invention is lacking.

4. Consequently, this opinion has been established in respect of the following parts of the international application:

- ☒ all parts
- ☐ the parts relating to claims Nos. _____

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US07/03694

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	3-6, 8-10, 12-16, 19-37	YES
	Claims	1-2, 7, 11, 17-18	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-37	NO
Industrial applicability (IA)	Claims	1-37	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-2, 7, 11, 17 and 18 lack novelty under PCT Article 33(2) as being anticipated by Clement et al.

As to claim 1, Clement et al disclose a method of treating skin, the skin characterized as having a stratum corneum surmounting an epidermis, the epidermis surmounting a dermis, the method comprising: irradiating the skin with laser radiation in a manner such that a plurality of elongated spaced-apart voids are formed in the skin (Col. 1, lines 40-46 wherein it is disclosed that skin is radiated to vaporize layers of tissue between 30 to 60 micrometers), the voids extending through the stratum corneum, through the epidermis, and into the dermis (Col. 1, lines 41-43 wherein it is disclosed that the target area is the dermis which inherently means that the tissue between the stratum corneum and the dermis is vaporized), with a volume of coagulated dermal tissue surrounding the voids, and with viable tissue remaining between the coagulated-tissue-surrounded voids (it is inherent that a volume of coagulated tissue would surround the voids and that viable tissue remains between the voids as a result of the inflammatory response to the vaporization of the skin tissue layers), and such that shrinkage of collagen in the coagulated tissue surrounding the voids causes an essentially immediate reduction of the volume of the voids, and a subsequent healing process eliminates the voids and replaces coagulated tissue with new tissue (Col. 2, lines 8-27 wherein it is disclosed that the result of the laser treatment is the shrinkage of collagen and wrinkle removal and therefore reducing the volume of the voids).

As to claim 2, Clement et al disclose a method of claim 1, wherein the skin is wrinkled skin and the treatment reduces the wrinkling of the skin (Col. 2, lines 8-27).

As to claim 7, Clement et al disclose a method of claim 1, wherein the laser radiation has a wavelength that is strongly absorbed by water (Col. 1, lines 40-44).

As to claim 11, Clement et al disclose a method of claim 1, wherein the laser radiation is delivered as a sequence of pulses (Col. 3, lines 66-67) with each pulse forming a corresponding one of the spaced-apart voids (Col. 1, lines 40-46).

As to claim 17, Clement et al disclose a method of treating skin laxity, the skin characterized as having a stratum corneum surmounting an epidermis, the epidermis surmounting a dermis, the method comprising: delivering a plurality of pulses of laser radiation from a CO₂ laser to the skin in a manner such that a plurality of elongated spaced-apart voids are formed in the skin (Col. 1, lines 40-46 wherein it is disclosed that skin is radiated to vaporize layers of tissue between 30 to 60 micrometers utilizing a CO₂ laser), the voids extending through the stratum corneum, through the epidermis, and into the dermis (Col. 1, lines 41-43 wherein it is disclosed that the target area is the dermis which inherently means that the tissue between the stratum corneum and the dermis is vaporized), with a volume of coagulated dermal tissue surrounding the voids, and with viable tissue remaining between the coagulated-tissue-surrounded voids, and such that shrinkage of collagen in the coagulated tissue surrounding the voids causes a prompt immediate shrinkage of the voids causing a corresponding reduction of the skin laxity, and a subsequent healing process eliminates the voids and replaces coagulated tissue with new tissue (Col. 2, lines 8-27 wherein it is disclosed that the result of the laser treatment is the shrinkage of collagen and wrinkle removal and therefore reducing the volume of the voids followed by the healing process).

As to claim 18, Clement et al disclose a method of claim 17, wherein the CO₂ laser radiation has a wavelength of about 10.6 micrometers (Col. 1, lines 40-46).

Claims 3-6, 8-10, 13-16, 20-22 and 24-27 lack an inventive step under PCT Article 33(3) as being obvious over Clement et al in view of DeBenedictis et al.

As to claims 3-5, Clement et al disclose a method of claim 1 with all the limitations of the claim with the exception of wherein the skin is abnormally pigmented skin and the treatment reduces the abnormal pigmentation wherein the abnormal pigmentation is normal or due to melasma. DeBenedictis et al disclose a method and apparatus for treating skin tissue with optical laser energy wherein it is disclosed that the laser treatment can be utilized to reduce abnormal pigmentation (paragraph 0006) wherein the abnormal pigmentation is normal or due to melasma (paragraph 0086 wherein it is disclosed that the treatment can be utilized for conditions such as dermal melasma). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the laser treatment method Clement et al for the reduction of abnormal pigmentation of the skin since laser treatment is well known in the art as disclosed by DeBenedictis et al to be an effective method and means of reducing skin discoloration.

As to claim 6, Clement et al disclose a method of claim 1 with all the limitations of the claim with the exception of wherein the skin is scar tissue. DeBenedictis et al disclose a method and apparatus for treating skin tissue with optical laser energy wherein it is disclosed that the laser treatment can be utilized on scar tissue (paragraph 0039 wherein it is disclosed that the laser treatment can be used for treating acne scars). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the laser treatment method Clement et al for the reduction of acne scars since laser treatment is well known in the art as disclosed by DeBenedictis et al to be an effective method and means of reducing scar tissue and other blemishes.

Continued in Supplemental Box

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US07/03694

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Previous Supplemental Box

As to claims 8-10, Clement et al disclose a method of claim 7 with all the limitations of the claim with the exception of wherein the laser radiation has an absorption coefficient in water is between about 100 cm⁻¹ and 12,300 cm⁻¹, 100 cm⁻¹ and 1000 cm⁻¹, and about 500 cm⁻¹ and 1000 cm⁻¹. DeBenedictis et al disclose a method and apparatus for treating skin tissue with optical laser energy wherein it is disclosed that the laser treatment utilizes radiation having an absorption coefficient of about 200cm⁻¹, which falls within the claimed ranges (paragraph 0090). Therefore it would have been obvious to one having ordinary skill to utilize laser radiation having an absorption coefficient in water between about 100 cm⁻¹ and 12,300 cm⁻¹ and between 100 cm⁻¹ and 1000 cm⁻¹, since it is disclosed that water is the only significant chromophore that can be used when utilizing radiation in the near infrared range. Further, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize laser radiation that has an absorption coefficient in water between about 100 cm⁻¹ and 12,300 cm⁻¹, 100 cm⁻¹ and 1000 cm⁻¹, and about 500 cm⁻¹ and 1000 cm⁻¹, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

As to claim 13, Clement et al disclose a method of claim 1 with all the limitations of the claim with the exception of wherein each of the laser radiation is delivered in a beam thereof inclined orthogonally to the skin. DeBenedictis et al disclose a method and apparatus for treating skin tissue with optical laser energy wherein it is disclosed that the laser treatment can be delivered in a beam thereof inclined orthogonally to the skin (paragraph 0017 wherein it is disclosed that the treatment zone can be perpendicular to the beam). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Clement et al to deliver the laser beam perpendicular to the surface of the skin since it is well known in the art as disclosed by DeBenedictis et al to be an effective configuration for delivering light radiation to the skin for skin resurfacing.

As to claim 14, Clement et al disclose a method of claim 2 with all the limitations of the claim with the exception of wherein each of the pulses is delivered in a beam thereof inclined non-orthogonally to the skin. DeBenedictis et al disclose a method and apparatus for treating skin tissue with optical laser energy wherein it is disclosed that the laser treatment can be delivered in a beam thereof inclined non-orthogonally to the skin (paragraphs 0058 and 0105 wherein it is disclosed that the beam can be directed parallel to the treatment zone). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Clement et al to deliver the laser beam parallel to the surface of the skin since it is well known in the art as disclosed by DeBenedictis et al to be an effective configuration for delivering light radiation to the skin for skin resurfacing.

As to claims 15 and 16, Clement et al disclose a method of claim 1 with all the limitations of the claim with the exception of wherein the density of spaced-apart voids is about 200 and 5000 treatment zones per cm² and 1000 and 3000 treatment zones per cm². DeBenedictis et al disclose a method and apparatus for treating skin tissue with optical laser energy wherein it is disclosed that the laser treatment can be delivered in a beam pulses wherein the density of spaced-apart voids is about 200 and 5000 treatment zones per cm² and 1000 and 3000 treatment zones per cm² (paragraph 0109).

As to claim 20, Clement et al disclose a method of claim 18 with all the limitations of the claim with the exception of wherein for one or more of the voids, the ratio of the cross sectional area in the plane of the skin surface of the one or more the voids to the depth of the one or more the voids is in the range of between about 0.01 mm and 2 mm. DeBenedictis et al disclose a method and apparatus for treating skin tissue with optical laser energy wherein it is disclosed that the laser treatment can be delivered in a beam pulses wherein one or more the voids to the depth of the one or more the voids is in the range of between about 0.01 mm and 2 mm (paragraph 0109 wherein it is disclosed that the beam reaches a depth of up to 4mm). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Clement et al to deliver a beam of light to a depth of up to 4 mm since this value would encompass a range large enough to reach the dermis of a wide variety of patients for the reduction of wrinkles in skin treatment.

As to claims 21 and 22, Clement et al disclose a method of claim 18 with all the limitations of the claim with the exception of wherein the voids have a diameter between about 100 micrometers and 500 micrometers and a depth between about 200 micrometers and 4.0 millimeters, and further wherein the ratio of the diameter of the one or more voids to the depth of one or more of the voids is in the range of about .05 to .1. DeBenedictis et al disclose a method and apparatus for treating skin tissue with optical laser energy wherein it is disclosed that the laser treatment can be delivered in a beam pulses wherein one or more the voids have a diameter between about 100 and 500 micrometers (paragraph 0017) and the depth of the one or more the voids is in the range of between about 0.01 mm and 2 mm (paragraph 0109 wherein it is disclosed that the beam reaches a depth of up to 4mm), and further wherein the ratio of the diameter of the one or more voids to the depth of one or more of the voids is in the range of about .05 to .1 (paragraph 0109 wherein it is disclosed that the aspect ratio is at least 1:2). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Clement et al to deliver a beam of light forming a void with a diameter between about 100 and 500 micrometers and a depth of up to 4 mm and further wherein the ratio of the diameter of the one or more voids to the depth of one or more of the voids is in the range of about .05 to .1 since this value would encompass a range large enough to reach the dermis and form a void that is capable of reducing wrinkles in skin of a wide variety of patients.

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As to claim 24, Clement et al disclose a method of claim 23 with all the limitations of the claim with the exception of wherein the voids and coagulated tissue initially cover between about 5 percent and 50 percent of an area of skin irradiated by the laser radiation pulses. DeBenedictis et al disclose a method and apparatus for treating skin tissue with optical laser energy wherein it is disclosed that the laser treatment can be delivered to form voids and coagulated tissue that initially covers about 5 and 50 percent of an area of skin irradiated by the laser radiation pulses (paragraph 0047 wherein it is disclosed that Heat shock zone 404 is made up of substantially viable tissue that has been thermally altered (e.g., such that greater than about 50% of the cells in the zone that were viable before treatment are still viable)). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Clement et al to have the voids and coagulated tissue initially cover between about 5-50% of an area of skin irradiated by the laser radiation pulses since it has been disclosed by to be an effective configuration for optimal removal of wrinkles in the skin.

As to claim 25, Clement et al disclose a method of claim 24, wherein the radiation pulses have energy between about 5 millijoules and 40 millijoules. DeBenedictis et al disclose a method and apparatus for treating skin tissue with optical laser energy wherein it is disclosed that the laser treatment can be delivered as pulses having energy between about 5 and 40 millijoules (see tables 1 and 2 wherein the pulses delivered fall within the claimed range). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Clement et al to deliver pulses having energy between about 5 and 40 millijoules since it has been disclosed by DeBenedictis et al to be an effective pulse rate for optimal removal of wrinkles in the skin.

As to claim 26, Clement et al disclose a method of claim 17 with all the limitations of the claim with the exception of wherein the voids are randomly distributed over an area of skin irradiated by the laser radiation pulses. DeBenedictis et al disclose a method and apparatus for treating skin tissue with optical laser energy wherein it is disclosed that the laser treatment can be delivered so as to form voids randomly distributed over an area of skin irradiated by the laser radiation pulses (paragraphs 0052 and 0086). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Clement et al to form voids randomly distributed over an area of skin irradiated by the laser radiation pulses since it has been disclosed by DeBenedictis et al to be an effective means for removing wrinkles from and resurfacing the skin.

As to claim 27, Clement et al disclose a method of claim 17, wherein the delivering of a plurality of pulses of laser radiation from a CO2 laser to the skin is performed within one hour following the creation of an incision in the skin (Col. 1, lines 40-56 wherein it is disclosed that pulses from a CO2 laser are administered to the skin immediately after the first beam penetrates the skin).

Claim 12 lacks an inventive step under PCT Article 33(3) as being obvious over Clement et al in view of Kuklin et al.

As to claim 12, Clement et al disclose a method of claim 11 with all the limitations of the claim with the exception of wherein the laser radiation is delivered as a sequence of pulses at a pulse repetition rate of between about 100 and 5000 Hz. Kuklin et al disclose a laser skin treatment method and apparatus that delivers pulses of radiation at a pulse frequency of 100 Hz (paragraph 0023). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Clement et al by delivering pulses of radiation at a rate of about 100 Hz since it has been disclosed by Kuklin et al to be an optimal rate for treating the skin for removal of skin cells and hair.

Claims 19, 23, and 28 lack an inventive step under PCT Article 33(3) as being obvious over Clement et al.

As to claim 19, Clement et al disclose a method of claim 18 with all the limitations of the claim with the exception of wherein the voids have a cross sectional area at the skin surface of between about 0.02 mm² and 0.5 m². However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the voids have a cross sectional area at the skin surface of between about 0.02 mm² and 0.5 m² since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Further it would have been obvious to one of ordinary skill in the art to have the voids be any cross sectional area that would most effectively reduce the wrinkles within the skin of a patient.

As to claim 23, Clement et al disclose a method of claim 19, with all the limitations of the claim with the exception of wherein the thickness of coagulated tissue surrounding the void is about 20 micrometers and 80 micrometers immediately after ablation of the voids. However it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the thickness of the coagulated tissue surrounding the void be about 20 to 80 micrometers, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimal or workable ranges involves only routine skill in the art.

As to claim 28, Clement et al disclose a method of claim 17 with all the limitations of the claim with the exception of wherein the delivering of a plurality of pulses of laser radiation from a CO2 laser to the skin is performed during the period 1 to 6 weeks following the creation of an incision in the skin. However it would have been obvious to one having ordinary skill in the art at the time the invention was made to deliver the plurality of pulses of laser radiation from a CO2 laser to the skin during the period 1 to 6 weeks following the creation of an incision in the skin to repeat the treatment and assure that the collagen is reduced and the wrinkles are removed.

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Claims 29, 34, and 35 lacks an inventive step under PCT Article 33(3) as being obvious over Altshuler et al.

As to claim 29, Altshuler et al disclose an apparatus for laser treatment of skin, the laser treatment including irradiating the skin with laser radiation in a manner such that a plurality of elongated spaced-apart voids are formed in the skin (the recitation within the preamble has not been given patentable weight because it has been held that a preamble is denied the effect of a limitation where the claim is drawn to structure and the portion of the claim following the preamble is a self-contained description of the structure not depending for completeness upon the introductory clause), the apparatus comprising: a housing (412); a scanning apparatus (1808) located in the housing, the scanning apparatus arranged to receive a the laser radiation and arranged to reflect the laser radiation in a plurality of different directions (paragraph 0141 wherein it is disclosed that reflector 1808 is used to reflect light onto the treatment site in a plurality of directions); a lens (416) located in the housing (see figure 4A), the lens arranged for focusing the laser radiation at a plurality of different points laterally spaced in a focal plane with spacing corresponding to the plurality of different directions of reflection (it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations); and a tip (417) removably attached to the housing for making contact with the skin (paragraph 0097; see figure 4C), the tip having optical access to the housing and optical access to the skin for allowing passage through the tip of the laser radiation focused by the lens, the optical access of the tip to the being about in the focal plane (see figure 4C). It is not disclosed that the tip is removable. However it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus to have the tip removable so that the device can be used for several different patients by simply replacing the tip so that a clean sterile tip is used.

As to claims 34 and 35, Altshuler et al disclose an apparatus of claim 29, wherein the optical access of the tip to the housing includes a window (417) transparent to the laser radiation and arranged to prevent air-flow between the tip and the housing (412) and the window is attached to the housing covering the aperture (see figures 4B and 4C).

Claims 30-33 lacks an inventive step under PCT Article 33(3) as being obvious over Altshuler et al in view of Eilers et al.

As to claim 30, Altshuler et al disclose an apparatus of claim 29 with all the limitations of the claim with the exception of wherein the tip includes a port connectable to a vacuum pump for exhausting smoke resulting from the ablation from the tip. Eilers et al disclose an apparatus for treating skin conditions comprising a vacuum pump (32) for the exhaustion of smoke resulting from the ablation from the tip of the device (paragraph 0006 and 0014). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Altshuler et al to include a vacuum source as disclosed by Eilers et al for the removal of unwanted substances from the skin which includes smoke and abraded skin.

As to claim 31, Altshuler et al disclose an apparatus of claim 30 wherein the tip has a plurality of apertures (paragraph 0014 and 0085 wherein it is disclosed that the device can comprise apertures) therein for allowing a flow of air through the tip from the apertures to the port.

As to claim 32, Altshuler et al disclose an apparatus of claim 30 with all the limitations of the claim with the exception of wherein the tip has a replaceable filter therein covering the port preventing ingestion of debris via the port into the vacuum pump. Eilers et al disclose an apparatus for treating skin conditions comprising a vacuum pump (32) and corresponding vacuum filter (34). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Altshuler et al to have a filter in conjunction with a vacuum pump to prevent small particles from reaching the moving parts of the vacuum pump (paragraph 0054).

As to claim 33, Altshuler et al disclose an apparatus of claim 29 with all the limitations of the claim with the exception of wherein the tip includes a port connectable to an air pump (44) and has a plurality of apertures therein for providing a flow of air through the tip from the port to, the apertures for allowing ejection of smoke, resulting from the ablation, from the tip. Eilers et al disclose an apparatus for treating skin conditions comprising a tip (86) that includes a port (port inlet where line 42 connects to applicator) connectable to an air pump and has a aperture (118) therein for providing a flow of air through the tip from the port to, the apertures for allowing ejection of smoke, resulting from the ablation, from the tip. It is not disclosed that there a plurality of apertures. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a plurality of orifices or apertures for the quicker release of smoke and other debris from the vacuum system.

Claims 36 and 37 lack an inventive step under PCT Article 33(3) as being obvious over Altshuler et al in view of Eilers et al in further view of Sinofsky.

As to claims 36 and 37, Altshuler et al disclose an apparatus of claim 34 with all the limitations of the claim with the exception of wherein the window, on a side thereof facing into the tip has a plurality of layers of material thereon transparent to the laser radiation, the layers being sequentially removable one from the other and wherein the layers are plastic layers. Sinofsky discloses a phototherapy apparatus that utilizes a laminated layer in the tip of the device (Col. 5, line 55 to Col. 6, line 9) and wherein the laminate is a polymer material which encompasses plastic. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a laminate layer on the tip of the apparatus so that each outer layer can be peeled after usage to keep the tip clean and sterile for the next patient.

Claims 1-37 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.